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The role of motivational climate for sense of vitality in organized youth grassroots

football players: Do harmonious and obsessive types of passion play a mediating role?

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**The role of motivational climate for sense of vitality in organized youth grassroots
football players: Do harmonious and obsessive types of passion play a mediating role?**

Abstract

The mediating role of types of passion in the relationships between motivational climates and subjective vitality was examined among 283 experienced young Norwegian grassroots football players (aged 12-16 years). A Structural Equation Model (SEM) based path model revealed that mastery climate predicted subjective vitality directly as well as mediated by harmonious passion and through a chain in which harmonious passion fuelled obsessive passion, in turn facilitating vitality. The former was the stronger mediation path of the two. A performance climate was unrelated to obsessive passion. The pattern of results generally supports the proposed motivational climate – passion – vitality link. However, the observed mediation chain involving also a positive mastery climate - obsessive passion – vitality link invites further examinations to better understand both young football players' subjective meaning making of harmonious and obsessive passion.

Key words: Climates, Vitality, Soccer, Harmonious and Obsessive Passion

Introduction

As a widespread structured out-of-school-time activity, grassroots football among other sports activities has been hypothesized to potentially influence positive youth development and well-being (e.g., Eccles & Gootman, 2002; Lerner, 2004). Subjective vitality, the experience of feeling energetic and alive is perceived to signal personal meaning and self-realization and to define an embodied state of well-being (Ryan & Deci, 2002; Ryan & Frederick, 1997). Such positive states can be seen as the “organizers of development,” providing the conditions needed to ensure optimal self-regulation of behaviours, learning, and the expression of a wide array of competencies (Fredrickson, 2001; Lyubomirsky, King, & Diener, 2005). Hence, promoting a sense of vitality among young people through participation in football would thus seem an important developmental and educational endeavour (Eccles, Barber, Stone & Hunt, 2003; Grossman & Bulle, 2006).

Nevertheless, taking part in sport does not represent a “magic developmental or educational bullet” in that participation automatically brings about positive developmental experiences. Whereas the influence of participation dimensions, such as the breadth (number of activities), the intensity (quantity of time spent participating), and the duration of participation (cross-year continuity) for positive youth development more generally has been examined and may play a role (Zarrett, Fay, Li, Carrano, Phelps & Lerner, 2009), the role of psychological and social characteristics embedded in the context of sport for young peoples’ mental/psychological wellbeing is a road less travelled in the youth development literature (Theokas, 2009; Whitelaw, Teuton, Swift & Scobie, 2010).

Within the realm of sport and exercise psychology, one strand of research has looked into how the motivational sport climate may affect young peoples’ wellbeing in sport. To this end, studies embedded in achievement goal theory (Nicholls, 1989) and the self-determination frameworks (Ntoumanis, 2012; Ryan & Deci, 2002) have investigated

potential mediating factors to operate as a mediating mechanism between motivational climates and well-being outcomes (Ommundsen, Løndal & Loland, 2013). Whereas several studies have focused on need satisfaction and regulation of motivation as mediating influences (e.g. Ntoumanis, 2012; Ommundsen, Lemyre, Abrahamsen & Roberts, 2010; Reinboth, Duda & Ntoumanis, 2004; Reinboth & Duda, 2006; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002), researchers have also argued that different styles of engagement as reflected in types of passion may take such a mediating role (Vallerand et al., 2006, Vallerand, 2012a). For example, Vallerand (2012a) has argued for the need to identify determinants of passion and has underlined the search for “best practices” that may help facilitating harmonious passion and prevent an obsessive passion in order to enhance sustainable psychological well-being. Indeed, passion manifest itself as important for well-being, functioning and performance in leisure-time pursuits, and results revealing that motivational climates drives types of passion (Fredricks, Alfeld & Eccles, 2010). On this background, we took advantage of the integrative sequence on passion (e.g., Vallerand et al., 2006) backed up by conceptualisations from achievement goal theory and self-determination theory and examined the mediating role of types of passion in club sport soccer in a mediated sequence from motivational climates to vitality among young players. In the following we briefly describe types of passion, their differential links to vitality and then climates as drivers of differential types of passion to make the overview of the mediational model depicted in Fig 1 complete.

Fig 1 in here

Types of passion and their differential relations to vitality

Vallerand and co-workers (Vallerand, et al., 2003; Vallerand, et al., 2006) have proposed dualistic conceptualization of passion that sheds light on types of passion as

possible psychological mechanisms fuelling differential affective experiences in activity involvement.

Two types of passion have been distinguished: Harmonious passion and obsessive passion. According to the dualistic conceptualization, both types of passion refer to a strong inclination towards an activity that one finds important, invests time in and enjoys. As such, both harmonious and obsessive passion reflect a very strong valuing of the activity at hand that acquires such importance for the individual that it is internalized by the individual and becomes part of the person's identity (Ryan & Deci, 2002). Nevertheless, Vallerand and colleagues (Vallerand et al., 2003, 2006) also propose that divergent internalization processes affect the type of passion experienced toward an activity.

Harmonious passion (HP), results from an autonomous internalization of the activity into the person's identity. An autonomous internalization occurs when individuals have freely accepted the activity as important to them without any contingencies attached to the activity and its outcomes (Vallerand et. al., 2006). The autonomous internalization comes from an intrinsic tendency of the self (Deci & Ryan, 2000). Harmonious passion thus provides a strong, but controllable, desire to engage in the activity, which engenders a sense of volition and personal endorsement about pursuing the activity without any contingencies attached to it (Mageau et.al., 2009). Hence, the activity and its outcomes are perceived as under one's control and in concordance with one's self-integrity (Hogdins & Knee, 2002). For example, a young soccer players would decide not to go for a soccer practice session, even when peers try to persuade him or her to do so, because the player have not yet fully recovered from an injury.

Indeed, harmonious passion has been associated with enhanced subjective well-being, reduced stress, positive emotions and flow in different life contexts (Rousseau & Vallerand, 2008; Philippe, Vallerand & Lavigne, 2009), including sport (Mageau et.al.,

2005; Vallerand et.al., 2003). Harmonious passion has also been linked to less suffering from acute injuries, and more health-promoting coping behaviours when injured (Rip et al., 2006). Additionally, recent research has revealed that while both harmonious and obsessive passion leads to engagement in deliberate practice in basketball and water-polo, only harmonious passion leads to subjective well-being while practising (Vallerand et al., 2008)..

Obsessive passion (OP), in contrast, is depicted by internal and/or external pressures seen as resulting from a controlled internalization of the activity into the person's identity. An intrapersonal and/or interpersonal pressure may push the individual to engage in the activity either because certain contingencies are attached to the activity such as social pressure, acceptance or self-esteem, or because the sense of excitement derived from the activity engagement becomes uncontrollable. Hence, the strong sense of obligation included in obsessive passion may lead to a controlling engagement. For example a young soccer player may choose to tell the coach that he or she is ready to play a match although she suffers from an injury, due to felt pressure to take part to defend the position on the team.

Consequently, obsessive passion is expected to lead to reduced sense of vitality or negative outcomes during and after activity involvement due to various contingencies that are attached to the activity, and an obsessively passionate person typically feels an internal pressure to perform his or her activity for reasons external to the activity itself (Mageau, Vallerand, Rousseau, Ratelle & Provencher, 2005; Vallerand et.al., 2006). Examples may be involvement in sport in order to gain social approval, win, or to achieve a normative standard of excellence. Indeed, research has revealed that obsessive passion for an activity has been linked to perceived stress, interpersonal conflicts, negative emotions (Mageau et.al., 2005), as well as prolonged suffering from chronic sport injuries (Rip, Fortin & Vallerand, 2006). Further, obsessive passion in sport has been found to relate to rigid

persistence in an activity that is ill-advised in terms of health consequences (Rip et al., 2006; Vallerand et al., 2003).

Climate influences on passion

Vallerand (2012b) and Vallerand and colleagues (Mageau et.al., 2009, Mageau, Carpentier & Vallerand, 2011; Vallerand et.al., 2003, 2006) also argue for the need to investigate environmental influences on passion by suggesting that psychological characteristics of the social environment are instrumental in the development of different types of passion which in turn may lead to differential emotional outcomes. Depending on the context in which the internalization of behavioural regulations occurs, the activity is supposed to be valued for either more autonomous or controlled reasons, leading to harmonious and obsessive passion, respectively. Indeed, Mageau and co-workers (Mageau et.al., 2009 study 1 and 2) found that harmoniously passionate young swimmers, skiers and dancers were more likely to experience higher levels of autonomy support from their social environment (e.g., parents) than those in the obsessive passion group. Likewise a controlling climate, a performance oriented climate reflects a pressuring, ego investing environment in which individuals feel compelled to pursue success and avoid failure, beating others or avoid doing poorly (e.g., Roberts, 2012; Ommundsen et. al., 2010; Wang & Biddle, 2007). In this climate the coach typically invites social comparison and the use of externally induced and less controllable criteria for success. The social-comparative elements of a performance oriented climate may be perceived as pressuring and bring about ego involving contingencies among players in which pressure to maintain self-esteem, to attain social approval and rewards, and the demonstration of superior ability become salient (Deci & Ryan, 2012). Hence, a performance climate may lead to a controlled internalization of soccer into the players' identity (Hodgins & Knee, 2002) facilitating obsessive passion in soccer (Grolnick

& Ryan, 1997; Mageau et.al., 2009, 2011; Ommundsen et.al., 2010; Quested & Duda, 2010; Vallerand et.al., 2006; Ryan & Deci, 2000; Vallerand et.al., 2006).

In contrast, in mastery climate coaches typically encourage players to make use of self-referenced and self-chosen criteria to judge their competence. In this climate there should be little or no external constraints from the coach to play and fare better than others, leaving out internal or external contingencies and pressure on players to achieve better than others (Duda & Hall, 2001; Sarrazin et al., 2002). On the contrary, in a mastery climate players should be motivated to stay involved out of mastery, of improving, with little or no external or internal constraints. A mastery climate thus allows for making use of more personally controllable and less ego investing criteria of success such as doing your best or making a good effort expected to foster a sense of competence (e.g., Roberts, 2012; Ommundsen et. al., 2010). In other words, there should be limited or no contingencies and pressures to uniform behaviour which follows from externally imposed and less controllable criteria of success in a mastery climate (Deci & Ryan, 2012; Vallerand et al., 2006).

Accordingly, likewise a autonomy supportive climate, a mastery climate is likely to facilitate the development of harmonious passion by leading to a more self-determined, non-pressuring internalization of soccer into the players' identity by inducing a shift towards a perceived internal locus of causality that satisfies fundamental needs (Fredricks, Alfeld & Eccles, 2010; Mageau et al., 2009, 2011; Ommundsen et al., 2010; Quested & Duda, 2010; Vallerand et.al., 2006).

The present study

Despite some empirical evidence in support of the role of autonomous versus controlling aspects of the environment for types of passion (e.g. Mageau et al., 2009 study 1 and 2) , to our knowledge no previous research have examined the mediating role of types of passion in the relationships of mastery and a performance oriented motivational climates to

subjective vitality. Studying passion as a mediating factor may expand our understanding of the psychological processes by which perceived psychological environments may facilitate or hamper the development of young athletes' psychological well-being in sport. This would seem valuable from applied perspective possibly providing evidence based knowledge to coaches such as to pave the way for young athletes' well-being experiences in sport.

Following up on previous research (e.g. Vallerand et al., 2006), the following hypotheses were forwarded (see Fig 1): A mastery climate is expected to be positively related to subjective vitality, mediated by harmonious passion (path A1-B1). A performance climate negatively influences subjective vitality, mediated by reports of obsessive passion in soccer (path A2-B2).

Method

Participants and Procedures

The sample consisted of 283 young male (n=130) and female (n=66) grassroots club sport football players between the ages of 12 and 16 years (M= 13.09 years, SD = 0.78 years). Out of the 283 players, eighty seven chose not to or forgot to indicate their sex. The players were sampled during their participation in the Norway Cup international youth football tournament. A majority of the players had been involved in club sport football for at least five years or more (M= 4.67 yrs.; SD = 0.67 yrs.). All participants had been playing for their current coach for at least one year or more (M= 3.02 yrs; SD = 1.72 yrs.) allowing sufficient time for a coach-athlete relationship to develop (Jowett & Ntoumanis, 2004). Parental informed consent was obtained prior to tournament participation, and all questionnaires were distributed in a quiet setting at or around the schools where the teams stayed during the tournament.

Measures

Perceived Motivational Climate: Perception of the motivational climate was assessed by an abbreviated version of the Norwegian version (Roberts & Ommundsen, 1996) of the Perceived Motivational Climate in Sport Questionnaire (PMCSQ; Seifriz et al., 1992). The original PMCSQ inventory was developed within the context of basketball and consists of two sub-scales measuring ego involving (12 items) and task involving (9 items) motivational climates. The abbreviated version contained a selection of five items (Mastery climate), and four items (performance climate) based on factors loadings in the original Norwegian version with mastery items reflecting an emphasis on effort and co-operation (e.g., “Trying hard is rewarded”; “Each player’s improvement is important”). Performance climate items comprised the perception of rivalry and social comparison focus among team-mates (e.g., “Out-playing team-mates is important”, “Doing better than others is important”) and players’ perception of skill based unequal treatment of players from the coach. The stem for each item was: “On my soccer team....” Responses were scored on a 5-point Likert scale anchored from strongly agree (1) to strongly disagree (5). The full version PMSCQ instrument has demonstrated satisfactory construct validity and internal consistency in previous research (e.g., Seifriz, Duda & Chi, 1992; Ommundsen et.al., 2005; Roberts & Ommundsen, 1996). Results of the Mplus based CFA the factorial validation analyses on the abbreviated version using Mean-Adjusted Maximum Likelihood (MLM) robust estimator confirmed a two-factor structure yielding good fit indices. (X^2/df ratio CMIN/DF) = [df = 26, N= 283] = 1.91, $p < .001$; Comparative Fit index (CFI) = .97; Tucker-Lewis Index (TLI) = .96; Root Mean Square Error of Approximation (RMSEA) = .06 [.03-.08], and Standardized Root Mean Square Residual (SRMR) = .04). All factor loadings were significant, and ranged from .54 to .90. Alpha values were: Performance climate alpha = .82; Mastery climate, alpha = .81.

Harmonious and obsessive passion in soccer was measured by means of the two scales, harmonious passion (HP) and obsessive passion (OP) in sport. The scale was developed and further validated by Vallerand and colleagues (Vallerand et al., 2003; Vallerand & Miquelon, 2007; Mageau et al., 2005), and has revealed good validity and reliability across different samples and activities. The passion scale consists of seven items pertaining to harmonious passion and seven to obsessive passion. The scale was translated into the Norwegian language by means of a translation/back-translation procedure and modified to soccer by replacing “my activity” with “soccer”. One item example of harmonious passion within soccer is: “Soccer allows me to live memorable experiences”. One item example of obsessive passion is: “I have a tough time controlling my urge to play soccer”. Support for the construct validity of the Norwegian version of the scale used in the context of leisure activity engagement has been obtained (Stenseng, 2008). Given that the scale was taken from a sample of Norwegian psychology students (Stenseng, 2008) and modified for use among this sample of clearly younger soccer players, we examined their factorial validity by first conducting exploratory factor analysis on one half of our sample, followed by a confirmatory factor analysis (CFA) on the second half. The exploratory factor analysis (varimax) revealed a two factor structure as expected. However, the item on the HP (“For me soccer is a passion, that I still manage to control”) scale revealed a double loading, and the HP scale item (“I am completely taken with this activity”) loaded among the hypothesized OP items. Hence, these two were omitted, and five of the original seven HP items and all original seven OP items were included in the confirmatory factor analysis. Results of the CFA confirmed a two-factor structure of the Passion scale yielding acceptable fit indices. (X^2/df ratio CMIN/DF) = [df = 50, N= 283] = 2.67, $p < .001$; Comparative Fit index (CFI) = .95; Tucker-Lewis Index (TLI) = .93; Root Mean Square Error of Approximation (RMSEA) = .08 [.06-.10], and Standardized Root Mean Square Residual

(SRMR) = .07). All loadings were significant and ranged from .50 to .88, and correlation residuals with the indicators of the other factor (HP and OP, respectively) were low. Hence, there was no indication of problems with the respective indicators. Cronbach' alpha for the OP score was .93. Results indicated that the removal of two items on the HP scale only marginally reduced internal consistency (alpha HP scale = .83 before, alpha HP scale = .79 after) of the scale in question. The subscales of passion criteria of activity evaluation, degree of involvement (time and energy expenditure), love for the activity and the activity being a passion, were not included. Indeed they have rarely been since most athletes would be regarded highly passionate for their sport (Vallerand, 2012b).

Subjective vitality in soccer: We measured subjective vitality in soccer using the 6-item version of the Subjective Vitality Scale (SVS; Ryan & Frederick, 1997). This instrument taps the degree to which participants feel physically and mentally vigorous and alert while engaged in soccer (e.g., “when participating in soccer I feel alive and vital”). The time frame when answering was how they felt in soccer within the last week. Responses were indicated on a 7-point Likert scale anchored by not at all true (1) and very true (7). Results of the CFA confirmed the one-dimensionality of the Vitality scale yielding excellent fit indices. (X^2/df ratio CMIN/DF) = [df = 8, N= 283] = 2.11, p = .25; Comparative Fit index (CFI) = .98; Tucker-Lewis Index (TLI) = .97; Root Mean Square Error of Approximation (RMSEA) = .07[.02-.11], Standardized Root Mean Square Residual (SRMR) = .03). Loadings ranged from .44 to .91. Alpha coefficients have been satisfactory in previous research in sport (e.g. Reinboth, Duda, & Ntoumanis, 2004; Reinboth & Duda, 2006). Cronbach's alpha in the present study was .83.

Statistical analyses

To address the stated hypotheses, several sets of analyses were conducted. First, descriptive statistics and the zero-order relationships among the independent, mediator and

outcome variables were examined. When using one data source to measure theoretical constructs that are closely related there is a concern for a mono-method bias and for confounded measures (Lindell & Whitney, 2001). To address this, we conducted factor analysis with varimax rotation to determine evidence of discriminative validity of the main theoretical constructs. Evidence supporting discriminative validity was found as reflected in genuine factor loadings for all constructs with cross-loadings generally being below .20.

Second, the hypothesised model comprising indirect influences (e.g., mediated by types of passion) on subjective vitality (see Figure 1) was tested using SEM based constrained path analyses (Mplus version 7). Each latent variable was measured with their respective observed indicators. One indicator per latent variable was fixed to 1.0 to scale the latent variables to a common metric. The exogenous variables were allowed to co-vary among themselves. The same fit indices that were utilized for CFA analysis of the climate, passion and vitality scales were used again to evaluate the fit of the hypothesized path model. Generally, RMSEA values of .08 or less represent acceptable fit with values of .05 or lower indicating good fit, and 90% CI should not exceed .10 for acceptable fit (Kline, 2005). CFI and TLI values should be .90 or higher and SRMR values of less than or equal to .09 represent adequate fit (Hu & Bentler, 1995, 1999)

Results

Descriptive results, bivariate and partial correlations

The mean values, bivariate and partial correlations are shown in Table 1. Means indicate that these young players experienced the soccer context as being quite strongly mastery oriented, and clearly less so performance oriented. Mean values for harmonious passion was higher than for obsessive passion, and the players scored relatively high on subjective vitality.

Table 1 in here

In terms of correlations the pattern was generally in line with expectations. Nevertheless, a performance climate was unexpectedly uncorrelated to obsessive passion. Unexpectedly also, obsessive passion correlated positively with vitality. In line with previous research using the passion scale (e.g., Vallerand et al., 2006) the two types of passion were strongly positively inter-correlated ($r=.52$, $p<.001$). Hence, we also run partial correlation analyses revealing that both harmonious and obsessive passion related positively to vitality, controlling for each other, respectively. The remaining pattern of partial correlations is shown in Table 1.

A path analytic model: Climate – Passion – Subjective vitality

The hypothesized climate → passion → vitality mediation model (Fig 1) revealed a marginally acceptable fit. (X^2/df ratio (CMIN/DF) = [df = 316, N=283] = 1.95, $p<.001$; CFI = .90, TLI = .89; RMSEA = .06 [.06-.07]; Standardized Root Mean Square Residual (SRMR) of .12). Aside of the path from a performance climate to obsessive passion (standardized beta = -.06, $p= n. s.$) all remaining paths were significant. Reflecting bivariate and partial correlation findings, unexpectedly obsessive passion related positively to vitality (standardized beta = .34, $p<.001$). In line with expectations, a mastery climate related positively to harmonious passion (beta = .42, $p<.001$), and harmonious passion related positively to vitality (beta = .26, $P<.001$). Modification indices (high MI (58.06) and EPC (1.09) invited to improve model fit by regressing obsessive passion on harmonious passion. While realizing that by this post hoc fitting process we leave a confirmatory framework (Byrne, 2012), doing so in the current case would seem justifiable on empirical grounds. First, as revealed in the basic model two unexpected paths occurred in that a performance climate was unrelated to obsessive passion, and obsessive passion related positively to vitality. Second, partial correlation findings revealed that an obsessive passion related positively to vitality controlling for harmonious passion.

Adding the path from harmonious to obsessive passion (standardized regression weight = .58, $p < .001$), improved the model significantly (chi-square difference test $p < .05$) to reach good fit (X^2/df ratio (CMIN/DF) = [df = 314, N=283] = 1.69, $p < .001$; CFI = .93, TLI = .92; RMSEA = .05 [.05-.06] and Standardized Root Mean Square Residual (SRMR) = .08. In this re-specified model the performance climate – obsessive passion path remained non-significant (beta = .07, $p = n. s.$), a mastery climate related positively to harmonious passion (standardized regression weight = .43, $p < .001$), the harmonious passion – vitality path was significant and positive (standardized regression weight = .28, $p < .001$) as was the path from obsessive passion to vitality (beta = .29, $p < .001$). A mastery climate together with obsessive and harmonious passion altogether accounted for 25% of the variance in vitality. Due to the number of participants not identifying their gender, gender-invariance analysis of the model was not deemed possible. Results from the path analysis are shown in figure 2.

Fig 2 in here

Assessment of mediation

We used the procedure of Holmbeck (1997) as taken advantage of by Curran, Appleton, Hill & Hall (2011) to fully assess mediation. This procedure includes a first step in which an acceptable fit of a model 1 comprising only direct paths between the predictor variables and the outcome is confirmed. In a second step, the hypothesized fully mediated path model (i.e., the re-specified constrained model 2) with no direct paths between climates and vitality, needs to provide adequate fit with all paths to be tested for mediation being statistically significant. The final step 3 requires a comparison between the constrained fully mediation (re-specified model 2) and an unconstrained mediation model (model 3) in which direct mastery climate – vitality path from model 1 is added to the model. If there is no significant improvement in fit from model 2 to model 3 following the addition of the mastery climate variable, this would demonstrate full mediation. However, if the paths

between the predictor and the outcome variables are reduced in model 3 compared to model 1, but still significant, partial mediation is inferred (Holmbeck, 1997).

As shown in Table 2 fit indices revealed that model 1 provided excellent fit (X^2/df ratio (CMIN/DF) = [df = 85, N=283] = 1.53, $p < .001$; CFI = .97, TLI = .96; RMSEA = .05, [.03-.06], and Standardized Root Mean Square Residual (SRMR) = .05).

Table 2 in here

The path between performance climate and vitality was non-significant (standardized regression weights = -.04 $p = n.s.$), whereas the path between mastery climate and vitality was significant and strongly positive (standardized regression weight = .50, $p < .001$). Thus, testing mediation of passion is only possible in the link between a mastery climate and vitality (Baron & Kenny, 1986; Holmbeck, 1997). As already shown the re-specified hypothesized path model 2 demonstrated acceptable fit, and all paths relevant to test for mediation were significant. Thus step 2 was met (Holmbeck, 1997).

In the final step, the re-specified fully mediated path model (constrained model 2) was compared with the unconstrained mediation model (model 3). Model 3 (see Table 2) provided the following fit indices; (X^2/df ratio (CMIN/DF) = [df = 313 N=283] = 1.62, $p < .001$; CFI = .94, TLI = .93; RMSEA = .05 [.04-.06], and Standardized Root Mean Square Residual (SRMR) = .07). As revealed in Table 2, a chi-square difference test revealed that the two models significantly differed in their degree of fit (chi-square difference test $p < .001$). Further, while somewhat reduced, the direct path between a mastery climate and vitality was still highly significant in model 3 (beta = .39, $p < .001$).

In a separate Mplus analyses, the effect size and statistical significance of the indirect effect of a mastery climate on vitality via harmonious and obsessive passion was further determined by examining 95% bias corrected confidence intervals derived from 1000 bootstrapped resamples (Mackinnon, Lockwood & Williams, 2004). The bias corrected

confidence intervals for the indirect effects of a mastery climate on player vitality via harmonious and obsessive passion both excluded zero: (mastery – harmonious – vitality = .12, lower to upper 95% BC CI = .03 to .27) and (mastery – harmonious – obsessive – vitality = .07, lower to upper 95% BC CI = .01 to .14). Therefore, the relationship between a mastery climate and vitality is partly mediated via harmonious and obsessive passion with the mediation effect through harmonious passion being the stronger one. Hence, these results further support a partial mediation model (Lau and Cheung, 2012).

Given the cross-sectional design and the potential for multiple models to fit the data, a theoretically viable alternative model was also tested (Curran et al., 2011), in which the two types of passion were allowed to predict a sense of vitality mediated by perceptions of the motivational climate. The indices of fit revealed that this second rival alternative model did not fit the data well (CMIN/X2 (df = 5, n= 283) = 54.46, $p < .001$; CFI = .78, TLI = .56; RMSEA = .19; SRMR = .23).

Discussion

The present research examined the role of social and psychological factors embedded in achievement goal theory and types of passion on young players' subjective vitality in soccer. Our particular interest was to determine the hypothesized differential mediating role of harmonious and obsessive types of passion in the relationships of motivational climates to vitality in soccer.

We expected a mastery climate to relate positively with harmonious passion. This was what we found. The positive mastery climate – harmonious passion relationship supports recent arguments stating that when coaches emphasize a mastery oriented motivational climate they may help facilitate a psychological context that favours a non-pressured internalization of soccer into one's identity paving the way for harmoniously

passionate soccer involvement (Vallerand & Miquelon, 2007; Vallerand et al., 2006). In a mastery climate, players typically stay involved out of mastery, of improving, with little or no external or internal constraints putting pressure on them in terms of performing better than their teammates. Their urge to play should then be perceived as personally controllable which would seem indicative of a harmoniously passionate involvement. Such a condition runs parallel with an experimental research situation set up with children in the context of school. When a mastery climate was induced in which focus is on children's learning, mastery of tasks rather than competitive pressure, evaluation, testing and meeting external standards of performance, parents and teachers became less ego involved and less preoccupied with social comparative standards children's performance (Grolnick et al, 2002).

Unexpectedly, a performance climate was unrelated to obsessive passion. We would expect a climate in which playing better than their teammates is important and social comparative standards of achievement is valued among players and coaches to relate positively to obsessive passion. The perception that social comparative standards of success in the team are valued would be expected to bring about ego involving contingencies including a pressure to maintain self-esteem and to attain social approval in the group. Under these circumstances, players would be expected to experience an internal or external pressure to engage in soccer leading to a passionate but less controllable urge to practice and play to keep up with their teammates – an urge conceptually fitting well with obsessive passion. One explanation for this null finding could well be that those players who experience the climate as performance oriented, perceive unequal treatment and the social comparative standards as unfair and demotivating. Hence, rather than facilitating obsessive passion which in itself reflect motivation, energy and drive, the social comparative standards embedded in a performance climate may have created frustration, reduced motivation and

resignation among them reducing the externally imposed urge to practice and play “to keep up with the Joneses” (Wheeler, Martin & Suls, 1997). An alternative explanation may be the modest mean level of a performance climate observed among these young players marginalizing the influence of performance climate.

We expected harmonious passion to mediate the association between a mastery motivational climate and subjective vitality. Both our basic and re-specified mediation model gave support to the notion that a mastery climate may facilitate a harmoniously passionate soccer involvement leading to enhanced vitality possibly by facilitating a more autonomous internalization of soccer into the players’ identity. Nevertheless, indices in favour of a re-specification of the model called for adding a path from harmonious to obsessive passion. Taking advantage of these indices was deemed justified based on the unexpected observations that obsessive passion was unrelated to a performance climate and related positively to vitality. Hence, the added path from harmonious to obsessive passion helped reveal also a sequential mediation chain from mastery climate to vitality through harmonious passion and obsessive passion in turn positively predicting vitality.

At first sight it could well be argued that the latter sequential mediation path is not theoretically justified and readily explicable in light of previous findings. Indeed, the positive relationship between obsessive passion and subjective vitality stands in contrast to previous findings within sport (Vallerand, et al., 2006), dramatic arts and specialized studies in psychology (Vallerand e .al., 2007). The observed pattern of findings may, however, still make sense. While the two types of passion, as indicated by the confirmatory factor analysis, clearly represent separate genuine theoretical constructs, the CFA also indicated that they share considerable common variance. Such common variance is expected on theoretical grounds in that the two types of passion usually are highly inter-correlated (Vallerand et al., 2003) given that both of them represent passion as such. Among these young players, such

common variance could also very well reflect that they have not yet reached developmental maturity so as to be fully cognitively able to differentiate between the two different theoretical connotations theoretically formulated in the conceptualizations of obsessive and harmonious types of passion, respectively (Vallerand, 2012). Hence, these young players' subjective meaning-making of the two passion constructs may be more conceptually alike empirically than theoretically formulated (e.g. Vallerand et al., 2003). To elaborate; the positive obsessive passion – vitality link may reflect that obsessive passion concept empirically is fuelled with “harmonious connotations” among these young players as a consequence of reduced cognitive differentiation capability in the early adolescent period (Gopnik & Wellman, 1994; Medin, 1989). Thus adding this path seemed viable both statistically and substantively. Harmonious passion may operate to empower obsessive passion towards a more harmonious passion construct thus acting “harmoniously” and positively to vitality. This may have led both harmonious and obsessive passion to link positively to vitality. Given this, hypothesized maladaptive outcomes of obsessive passion in terms of reduced vitality may therefore not yet have come to the fore. Rather, in the current case, obsessive passion as well may be seen as reflecting a relatively autonomous internalization of soccer into players' identity thus facilitating rather than hampering subjective vitality in soccer (Vallerand et. al., 2006).

A cultural explanation for the lack of a negative performance climate – obsessive passion – reduced vitality link cannot be ruled out. This would seem related to the context of Norwegian grassroots football for young people which is typically characterised by little competitiveness and a “sport for all” approach framed by regulations to secure playing opportunities for all. Indeed, the young players perceived the psychological climate as far more strongly mastery oriented than performance oriented (as observed by differences in climate mean values). Hence, negative effects of a performance climate on reduced vitality,

mediated by obsessive passion may not yet have come to the fore. It would be tempting to conclude that being obsessively passionate in football has positive pay-offs as indicated by enhanced vitality. This would be to jump to conclusions prematurely. Our findings do not rule out that being obsessively passionate in football at a later age stage may come to relate to reduced vitality and risk for experiencing more explicit negative behavioural and psychological outcomes. This may happen as the competitive pressure in football arise possibly eliciting a stronger performance climate (Donahue et al., 2009).

Further studies comparing younger and older groups of athletes are needed in order to examine conceptual similarities and differences between harmonious and obsessive passion across age levels. It is certainly true that most previous studies on passion in sport in which expected differential outcomes of the two types of passion typically have been found, have included older and more experienced groups of athletes than in the current case (Vallerand et al., 2006, 2008).

In order to rule out other potential methodological explanations for the unexpected observations attached to obsessive passion, we also reconstructed the two passion scales after the formula described by Amiot and colleagues (Amiot, Vallerand & Blanchard 2006) in which the two subscales first were transformed into z scores. Thereafter, obsessively passionate soccer players were defined to be those with a higher z score on the obsessive passion scale than on the harmonious passion subscale, whereas harmoniously passionate players were defined as those who presented a higher z score on the harmonious passion subscale than on the obsessive passion subscale. This procedure did not alter the results, thus ruling out scaling-specific methodological explanations.

The difference between the fully mediated model 2 and the partial mediating model 3 was statistically significant and while the direct path between a mastery climate and subjective vitality was reduced from model 2 to 3, it was still highly significant. Taken

together, these results support a part mediation model which runs parallel to those of previous research in which indices of need satisfaction have been found to partly mediate mastery climate-vitality and intrinsic motivation relationships (e.g., Reinboth & Duda, 2006; Ommundsen et al., 2010).

The mediation findings pertaining to the role of harmonious passion in the mastery climate – vitality link extend recent studies (e.g., Mageau et al., 2009) by showing that not only an autonomy supportive climate but a mastery climate as well may help enhance athletes' subjective vitality by facilitating players' harmonious passion for the activity. The strengthening of these players' harmonious passion may come as a result of a more autonomous internalization of the activity into their identity inducing a shift towards a perceived internal locus of causality that satisfies fundamental needs for competence, autonomy and relatedness (Grolnick & Ryan, 1997; Mageau et al., 2009, 2011). This being said, it would be interesting to test whether inducing a performance climate and a mastery climate, respectively, would facilitate autonomy supportive and controlling behaviours with differential effects for the two types of passion (Gurland & Grolnick, 2005). Such an extended analysis would hold potential for further refinements of the integrated sequence of passion between its antecedents and consequences coupled with ingredients from self-determination and achievement goal theory.

While the present findings to some extent support and expand the previous research emanating from the integrated sequence on passion, the study has a number of limitations. First, we used cross-sectional data. Longitudinal and experimental studies are needed to understand issues of causality and how social-contextual factors and types of passion operate to stimulate subjective vitality and other affective, cognitive and behavioural outcomes in sport. Indeed, there are already examples of longitudinal research to this end both in sport, art and academics (Vallerand et al., 2006, study 3; Vallerand et al., 2007, 2008). Moreover,

by including also an explicitly negative emotional outcome, we might have been able to trace negative emotional effects of a performance climate mediated by obsessive passion.

Design limitations notwithstanding, our analytical approach took full advantage of the SEM approach by using latent factors with their respective indices as manifest variables for both exogenous, mediators and endogenous variables in the model thus allowing for modelling of error in the manifest variables. Although not in a causal sense, the results add credence to the integrative sequence model of passion in sport. Future studies should examine additional relationships between social- contextual factors, types of passion and affective consequences. Such studies may take advantage of Vallerand and co-workers integrative sequence model of passion supplemented with constructs emanating from achievement goal and self-determination theories. The findings of the present study backed up by previous findings suggest that by complementing these theoretical perspectives, we may gain a better understanding of the intertwined dynamics that influence the quality of club sport soccer as an educational context for young people.

From an applied perspective, the support for a part mediation model indicates two ways by which coaches may facilitate vitality. First, it seems as if emphasizing effort and progress directly facilitate a stronger sense of vitality. Secondly, by creating a mastery climate, coaches seem in the position to fuel a type of passion that facilitates players' subjective vitality while practicing and playing. Indeed, both types of passion seem involved in the positive mastery climate – vitality link. Nevertheless, emphasizing a mastery climate should be prioritized so as encourage a sense of harmonious passion in these young players. First, the mediation through harmonious passion was the stronger mediation path of the two observed. Second, while obsessive passion as well helped mediate a positive link between a mastery climate and vitality, reduced vitality and negative affective states may occur at a later stage as these young players mature enabling them to better cognitively differentiate

between the two types of passion. Moreover, grassroots football typically tends to become more competitive as players grow older. This may induce a stronger performance climate in football teams paving the way for obsessive passion and maladaptive social and affective outcomes (Ommundsen, Roberts, Lemyre, & Miller, 2005). In order to reduce such a potential negative developmental trend, coaches may take advantage of framing matches and competitions as practice and learning experiences. Thereby they may take the edge of unnecessary competitive pressure and performance anxiety, instead installing a learning oriented atmosphere facilitating harmonious passion and increased vitality.

In conclusion, our findings reveal that a mastery climate, partly mediated by both harmonious and obsessive types of passion related positively to young players' subjective vitality in soccer. A performance climate was unrelated to types of passion and vitality. The overall pattern of findings illustrate that including types of passion as mediators in the link between social-contextual factors and affective outcomes emanating from achievement goal theory may help expand the model of passion forwarded by Vallerand and colleagues (Vallerand et al., 2006).

Authors` Contributions

YO provided input to measurements used in the study, processed and analysed the data for the current manuscript, and drafted the manuscript. FA, P-NL and GCR initiated the overall project and prepared the measurement instruments. FA and P-NL organised the data collection team and participated in the collection of data. All authors provided critical review of the manuscript and its analyses. All authors read and approved the manuscript in submission format.

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Table 1

Variable	Min -Max	M	SD	1.	2.	3.	4.	5.	alpha
1. Mastery climate	1-5	4.25	.69	-	-.24 ^b	.41 ^b	.33 ^b	.13 ^a	.81
2. Performance climate	1-5	2.81	1.16		-	-.13 ^a	-.12 ^a	.03	.82
3. Subjective vitality	1-7	4.84	1.24			-	.33 ^b	.38 ^b	.83
4. Harmonious passion	1-5	4.18	.70	.34 ^b	-.13 ^a	.20 ^b	-	.52 ^b	.79
5. Obsessive passion	1-5	3.33	1.08	-.05	.16 ^a	.25 ^b		-	.93

Note. Bivariate correlations above the diagonal and partial correlations below the diagonal.

^ap<.05. ^bp<.01.

Table 2

Variable	X ² /(df)	TLI	CFI	SRMR	RMSEA (90%CI)	change X ² (df)
M1: Absence of mediator	1.53	.96	.97	.05	.05 (.03-.06)	
M2: Full mediation	1.69	.92	.93	.08	.05 (.05-.06)	
M3: Partial mediation	1.62	.93	.94	.07	.04 (.04-.06)	M2 vs M3 = 23.39 (1) p<.001

Legends

Table 1: Descriptive statistics (means, standard deviations, range) and zero-order correlations for motivational climates, harmonious and obsessive passion and subjective vitality (n=283)

Table 2: Fit of path models

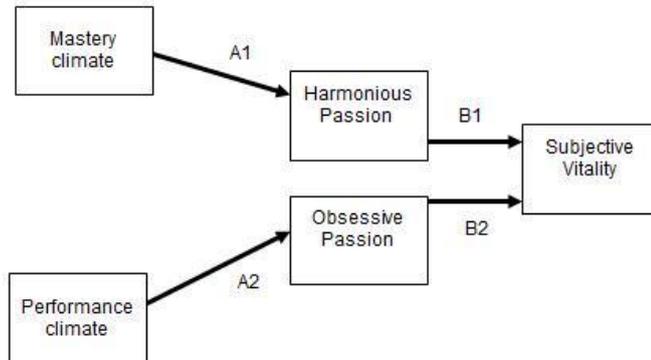


Figure 1:

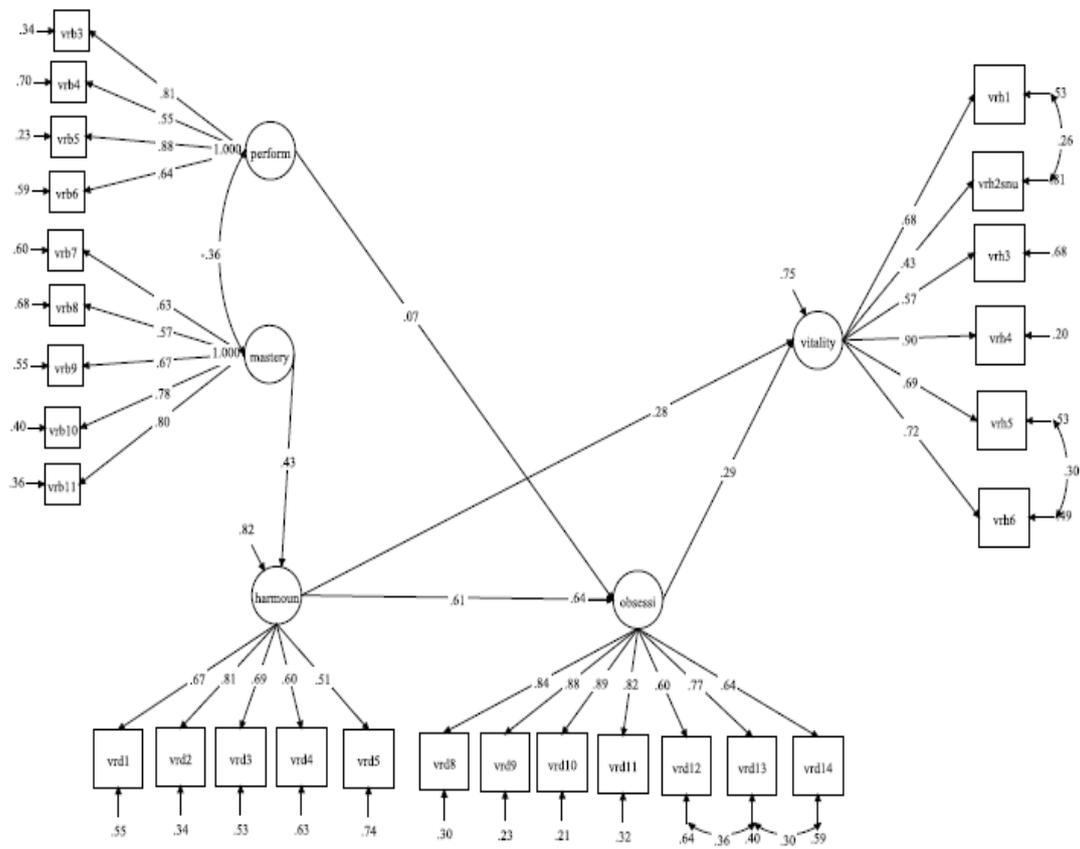


Fig 2

Figure captions

Figure 1: Hypothesised model on the influence of motivational climates on vitality mediated by types of passion.

Fig. 2: Results of the SEM based analysis of the re-specified mediation model reflecting mediation of types of passion in the relationship of motivational climates on subjective vitality. All coefficients were standardized to facilitate interpretability